## FCC Test Report

Product Name	VUZE-XR Camera
Model No.	HETVZ-XR
FCC ID.	2AKDRHETVZ-XR

Applicant	Humaneyes Technologies Ltd.
Address	Communication Center, Neve Ilan D.N. Harey Jerusalem, 9085000

Date of Receipt	Aug. 22, 2018
Issued Date	Oct. 02, 2018
Report No.	1880290R-RFUSP01V00
Report Version	V1.0
ac-MRA Tes	ting Laboratory 3023

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF or any agency of the government.

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## Test Report

Issued Date: Oct. 02, 2018 Report No.: 1880290R-RFUSP01V00

# **DEKRA**

Product Name	VUZE-XR Camera		
Applicant	Humaneyes Technologies Ltd.		
Address	Communication Center, Neve Ilan D.N. Harey Jerusalem, 9085000		
Manufacturer	Humaneyes Technologies Ltd.		
Model No.	HETVZ-XR		
FCC ID.	2AKDRHETVZ-XR		
EUT Rated Voltage	Battery DC 3.7V		
EUT Test Voltage	AC 120V / 60Hz(adaptor) DC 3.7V		
Trade Name	VUZE		
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2016		
	ANSI C63.4: 2014, ANSI C63.10: 2013		
Test Result	Complied		

Documented By :

peggy Tu

(Adm. Assistant / Peggy Tu )

Tested By :

(Assistant Engineer / Trista Huang)

Approved By :

(Director / Vincent Lin)



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Attachment 1:EUT Test PhotographsAttachment 2:EUT Detailed Photographs



## 1. GENERAL INFORMATION

## **1.1. EUT Description**

Product Name	VUZE-XR Camera
Trade Name	VUZE
Model No.	HETVZ-XR
FCC ID.	2AKDRHETVZ-XR
Frequency Range	2402-2480MHz
Channel Number	79
Type of Modulation	FHSS: GFSK(1Mbps) / $\pi$ /4DQPSK(2Mbps) / 8DPSK(3Mbps)
Antenna Type	PIFA Antenna
Channel Control	Auto
Antenna Gain	Refer to the table "Antenna List"
USB Cable	Shielded, 0.8m
	MFR: VUZE, M/N: KSA29B0500200D5
Power Adapter	Input: AC 100-240V~50/60Hz, 0.5A
	Output: 5V==-2.0A

## Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	LYNwave	N/A	PIFA	1.30dBi for 2.4 GHz

Note:

1. The antenna of EUT conforms to FCC 15.203.



Center Frequency of Each Channel:

•	•						
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 00:	2402 MHz	Channel 20:	2422 MHz	Channel 40:	2442 MHz	Channel 60:	2462 MHz
Channel 01:	2403 MHz	Channel 21:	2423 MHz	Channel 41:	2443 MHz	Channel 61:	2463 MHz
Channel 02:	2404 MHz	Channel 22:	2424 MHz	Channel 42:	2444 MHz	Channel 62:	2464 MHz
Channel 03:	2405 MHz	Channel 23:	2425 MHz	Channel 43:	2445 MHz	Channel 63:	2465 MHz
Channel 04:	2406 MHz	Channel 24:	2426 MHz	Channel 44:	2446 MHz	Channel 64:	2466 MHz
Channel 05:	2407 MHz	Channel 25:	2427 MHz	Channel 45:	2447 MHz	Channel 65:	2467 MHz
Channel 06:	2408 MHz	Channel 26:	2428 MHz	Channel 46:	2448 MHz	Channel 66:	2468 MHz
Channel 07:	2409 MHz	Channel 27:	2429 MHz	Channel 47:	2449 MHz	Channel 67:	2469 MHz
Channel 08:	2410 MHz	Channel 28:	2430 MHz	Channel 48:	2450 MHz	Channel 68:	2470 MHz
Channel 09:	2411 MHz	Channel 29:	2431 MHz	Channel 49:	2451 MHz	Channel 69:	2471 MHz
Channel 10:	2412 MHz	Channel 30:	2432 MHz	Channel 50:	2452 MHz	Channel 70:	2472 MHz
Channel 11:	2413 MHz	Channel 31:	2433 MHz	Channel 51:	2453 MHz	Channel 71:	2473 MHz
Channel 12:	2414 MHz	Channel 32:	2434 MHz	Channel 52:	2454 MHz	Channel 72:	2474 MHz
Channel 13:	2415 MHz	Channel 33:	2435 MHz	Channel 53:	2455 MHz	Channel 73:	2475 MHz
Channel 14:	2416 MHz	Channel 34:	2436 MHz	Channel 54:	2456 MHz	Channel 74:	2476 MHz
Channel 15:	2417 MHz	Channel 35:	2437 MHz	Channel 55:	2457 MHz	Channel 75:	2477 MHz
Channel 16:	2418 MHz	Channel 36:	2438 MHz	Channel 56:	2458 MHz	Channel 76:	2478 MHz
Channel 17:	2419 MHz	Channel 37:	2439 MHz	Channel 57:	2459 MHz	Channel 77:	2479 MHz
Channel 18:	2420 MHz	Channel 38:	2440 MHz	Channel 58:	2460 MHz	Channel 78:	2480 MHz
Channel 19:	2421 MHz	Channel 39:	2441 MHz	Channel 59:	2461 MHz		

- 1. The EUT is a VUZE-XR Camera with a built-in WLAN Bluetooth V3.0, V2.1+EDR, V4.0 transceiver this report for Bluetooth V3.0, V2.1+EDR.
- 2. These tests were conducted on a sample for the purpose of demonstrating compliance of Bluetooth transmitter with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
- 3. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test
- 4. Bluetooth operation was evaluated at both 1Mb/s and 3Mb/s data rates. 2Mb/s data rate was found, through pre-testing, to produce emissions similar to those for 3Mb/s.
- 5. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.
- 6. The EUT employs Adaptive Frequency Hopping (AFH) which identifies sources of interference namely devices operating in 802.11 WLAN and excludes them from the list of available channels. The process of re-mapping reduces the number of test channels from 79 channels to a minimum number of 20 channels.

Test Mode	Mode 1: Transmit - 1Mbps (GFSK)	
	Mode 2: Transmit - 3Mbps (8DPSK)	
	Mode 3: Charge mode	

## **1.2.** Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

	Product	Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook PC	DELL	Latitude E5440	B6TYTZ1	Non-Shielded, 0.8m

Sign	al Cable Type	Signal cable Description
А	USB Cable	Shielded, 0.8m

## **1.3.** Configuration of Tested System



## 1.4. EUT Exercise Software

- 1. Setup the EUT as shown in Section 1.4.
- 2. Execute software "Tera Term v4.99" on the Notebook PC.
- 3. Configure the test mode, the test channel, and the data rate.
- 4. Press "OK" to start the continuous Transmit.
- 5. Verify that the EUT works properly.

## 1.5. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	30-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from DEKRA Testing and Certification Co., Ltd. Web Site:

http://www.dekra.com.tw/english/about/certificates.aspx?bval=5

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: <u>http://www.dekra.com.tw/index\_en.aspx</u>

Site Description:	Accredited by TAF Accredited Number: 3023
Site Name: Site Address:	DEKRA Testing and Certification Co., Ltd No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan, R.O.C. TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789 E-Mail : info.tw@dekra.com

FCC Accreditation Number: TW3023



## **1.6.** List of Test Equipment

#### For Conducted measurements /CB3/SR8

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Date	Due. Date
	Temperature Chamber	WIT GROUP	TH-1S-B	EQ-201-00146	2018/02/12	2019/02/11
X	Spectrum Analyzer	Agilent	N9010A	MY48030495	2017/10/13	2018/10/12
X	Peak Power Analyzer	Keysight	8990B	MY51000410	2018/08/01	2019/07/31
X	Wideband Power Sensor	Keysight	N1923A	MY56080003	2018/07/25	2019/07/24
X	Wideband Power Sensor	Keysight	N1923A	MY56080004	2018/07/25	2019/07/24
X	EMI Test Receiver	R&S	ESCS 30	100369	2017/11/07	2018/11/06
X	LISN	R&S	ESH3-Z5	836679/017	2018/02/09	2019/02/08
X	LISN	R&S	ENV216	100097	2018/02/09	2019/02/08
Х	Coaxial Cable	DEKRA	RG 400	LC018-RG	2018/06/21	2019/06/20
For	Radiated measurements /	Site3/CB8				
	Equipment	Manufacturer	Model No.	Serial No.	Cali. Date	Due. Date
Х	Spectrum Analyzer	R&S	FSP40	100170	2018/03/12	2019/03/11
	Loop Antenna	Teseq	HLA6121	37133	2017/10/13	2019/10/12
Х	Bilog Antenna	Schaffner Chase	CBL6112B	2707	2018/06/24	2019/06/23
Х	Coaxial Cable	DEKRA	RG 214	LC003-RG	2018/06/14	2019/06/13
X	Pre-Amplifier	Jet-Power	JPA-10M1G33	170101000330 010	2018/06/14	2019/06/13
Х	Horn Antenna	ETS-Lindgren	3117	00135205	2018/05/03	2019/05/02
Х	Horn Antenna	SCHWARZBECK	9120D	576	2017/11/30	2018/11/29
X	Pre-Amplifier	EMCI	EMC012630SE	980210	2018/04/10	2019/04/09
	Horn Antenna	Com-Power	AH-840	101043	2018/01/09	2019/01/08
	Amplifier + Cable	EMCI	EMC184045SE	980370	2018/03/21	2019/03/20
X	Filter	MICRO-TRONICS	BRM50702	G270	2018/08/06	2019/08/05
	Filter	MICRO-TRONICS	BRM50716	G196	2018/08/06	2019/08/05

Note:

1. All equipments are calibrated every one year.

2. The test instruments marked with "X" are used to measure the final test results.

3. Test Software version :QuieTek EMI 2.0 V2.1.113.



## 2. Conducted Emission

## 2.1. Test Setup



#### 2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBµV) Limit					
Frequency MHz	Limits				
	QP	AV			
0.15 - 0.50	66-56	56-46			
0.50-5.0	56	46			
5.0 - 30	60	50			

Remarks: In the above table, the tighter limit applies at the band edges.

## 2.3. Test Procedure

The EUT and Peripherals are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

The EUT was setup to ANSI C63.4, 2014; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

#### 2.4. Uncertainty

± 2.26 dB

## 2.5. Test Result of Conducted Emission

Product	:	VUZE-XR Camera
Test Item	:	Conducted Emission Test
Power Line	:	Line 1
Test date	:	2018/09/04
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2441MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	dBµV	dB	dBµV
LINE 1					
Quasi-Peak					
0.162	9.745	38.240	47.985	-17.672	65.657
0.173	9.742	36.860	46.602	-18.741	65.343
0.193	9.738	33.840	43.578	-21.193	64.771
0.494	9.750	31.960	41.710	-14.461	56.171
3.599	9.882	21.260	31.142	-24.858	56.000
9.259	10.048	18.060	28.108	-31.892	60.000
Average					
0.162	9.745	24.650	34.395	-21.262	55.657
0.173	9.742	23.790	33.532	-21.811	55.343
0.193	9.738	21.430	31.168	-23.603	54.771
0.494	9.750	22.710	32.460	-13.711	46.171
3.599	9.882	10.300	20.182	-25.818	46.000
9.259	10.048	12.110	22.158	-27.842	50.000

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## Note:

1. All Reading Levels are Quasi-Peak and average value.

2. " means the worst emission level.

3. Measurement Level = Reading Level + Correct Factor



Product	:	VUZE-XR Camera
Test Item	:	Conducted Emission Test
Power Line	:	Line 2
Test date	:	2018/09/04
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2441MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	dBµV	dB	dBµV
LINE 2					
Quasi-Peak					
0.154	9.738	37.600	47.338	-18.548	65.886
0.170	9.737	36.360	46.097	-19.332	65.429
0.181	9.737	33.540	43.277	-21.837	65.114
0.494	9.740	29.120	38.860	-17.311	56.171
3.341	9.866	21.420	31.286	-24.714	56.000
3.611	9.872	24.880	34.752	-21.248	56.000
Average					
0.154	9.738	10.620	20.358	-35.528	55.886
0.170	9.737	24.040	33.777	-21.652	55.429
0.181	9.737	22.660	32.397	-22.717	55.114
0.494	9.740	24.520	34.260	-11.911	46.171
3.341	9.866	15.590	25.456	-20.544	46.000
3.611	9.872	6.790	16.662	-29.338	46.000

- 1. All Reading Levels are Quasi-Peak and average value.
- 2. " means the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor



Product	: VUZE-XR Camera					
Test Item	: Conducted Emission Test					
Power Line	: Line 1					
Test date	: 2018/09/0	94				
Test Mode	: Mode 3: 0	Charge mode				
Frequency	Correct	Reading	Measurement	Margin	Limit	
	Factor	Level	Level			
MHz	dB	dBµV	dBµV	dB	dBµV	
LINE 1						
Quasi-Peak						
0.166	9.744	26.100	35.844	-29.699	65.543	
0.185	9.738	25.040	34.778	-30.222	65.000	
0.228	9.739	21.040	30.779	-32.992	63.771	
0.439	9.748	22.060	31.808	-25.935	57.743	
0.521	9.751	29.980	39.731	-16.269	56.000	
0.865	9.775	19.060	28.835	-27.165	56.000	
Average						
0.166	9.744	16.640	26.384	-29.159	55.543	
0.185	9.738	14.120	23.858	-31.142	55.000	
0.228	9.739	13.310	23.049	-30.722	53.771	
0.439	9.748	16.390	26.138	-21.605	47.743	
0.521	9.751	25.650	35.401	-10.599	46.000	
0.865	9.775	15.010	24.785	-21.215	46.000	

- 1. All Reading Levels are Quasi-Peak and average value.
- 2. " " means the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor



Product	: VUZE-XI	R Camera			
Test Item	: Conducted	d Emission Test			
Power Line	: Line 2				
Test date	: 2018/09/0	4			
Test Mode	: Mode 3: C	Charge mode			
Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	dBµV	dB	dBµV
LINE 2					
Quasi-Peak					
0.177	9.737	22.600	32.337	-32.892	65.229
0.193	9.738	23.040	32.778	-31.993	64.771
0.252	9.740	18.960	28.700	-34.386	63.086
0.283	9.740	18.500	28.240	-33.960	62.200
0.517	9.741	20.900	30.641	-25.359	56.000
0.861	9.765	15.520	25.285	-30.715	56.000
Average					
0.177	9.737	11.260	20.997	-34.232	55.229
0.193	9.738	13.310	23.048	-31.723	54.771
0.252	9.740	4.440	14.180	-38.906	53.086
0.283	9.740	13.780	23.520	-28.680	52.200
0.517	9.741	15.110	24.851	-21.149	46.000
0.861	9.765	9.480	19.245	-26.755	46.000

- 1. All Reading Levels are Quasi-Peak and average value.
- 2. " means the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor

## 3. Peak Power Output

## 3.1. Test Setup



## 3.2. Limit

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

## **3.3.** Test Procedure

The EUT was setup to ANSI C63.4, 2014; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

## 3.4. Uncertainty

± 1.19 dB



## 3.5. Test Result of Peak Power Output

Product	:	VUZE-XR Camera
Test Item	:	Peak Power Output
Test Site	:	No.3 OATS
Test date	:	2018/09/14
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)

Channel No.	Frequency	Measurement	Required Limit	Result
	(MHz)	(dBm)		
Channel 00	2402.00	3.69	0.125W = 20.97dBm	Pass
Channel 39	2441.00	3.42	0.125W = 20.97dBm	Pass
Channel 78	2480.00	2.97	0.125W = 20.97dBm	Pass

Note: For AFH mode using 20 hopping channels, the maximum output power limit is 0.125W.



Product	:	VUZE-XR Camera
Test Item	:	Peak Power Output
Test Site	:	No.3 OATS
Test date	:	2018/09/14
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK)

Channel No.	Frequency	Measurement	Required Limit	Result
	(MHz)	(dBm)		
Channel 00	2402.00	-1.71	0.125W = 20.97dBm	Pass
Channel 39	2441.00	-1.58	0.125W = 20.97dBm	Pass
Channel 78	2480.00	-2.23	0.125W = 20.97dBm	Pass

Note: For AFH mode using 20 hopping channels, the maximum output power limit is 0.125W.



## 4. Radiated Emission

## 4.1. Test Setup

Under 30MHz

Receiver





#### Above 1GHz



#### 4.2. Limits

#### General Radiated Emission Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits						
Frequency MHz	Field strength	Measurement distance				
	(microvolts/meter)	(meter)				
0.009-0.490	2400/F(kHz)	300				
0.490-1.705	24000/F(kHz)	30				
1.705-30	30	30				
30-88	100	3				
88-216	150	3				
216-960	200	3				
Above 960	500	3				

Remarks: 1. RF Voltage  $(dB\mu V) = 20 \log RF$  Voltage (uV)

- 2. In the Above Table, the tighter limit applies at the band edges.
- 3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

### 4.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested compliance to FCC 47CFR 15.247 requirements.

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground, when measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 meter above ground.

The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna. The worst radiated emission is measured in the Open Area Test Site on the Final Measurement.

The measurement frequency range form 9kHz - 10th Harmonic of fundamental was investigated.

## 4.4. Uncertainty

± 4.08 dB above 1GHz
± 4.22 dB below 1GHz



## 4.5. Test Result of Radiated Emission

Product	:	VUZE-XR Car	VUZE-XR Camera					
Test Item	:	Harmonic Rad	Harmonic Radiated Emission					
Test Site	:	No.3 OATS						
Test date	:	2018/09/03						
Test Mode	:	Mode 1: Trans	mit - 1Mbps (G	FSK)(2402MHz)				
Frequency		Correct	Reading	Measurement	Margin	Limit		
		Factor	Level	Level				
MHz		dB	dBµV	dBµV/m	dB	dBµV/m		
Horizontal								
Peak Detector:								
4804.000		2.511	43.930	46.440	-27.560	74.000		
7206.000		9.511	42.810	52.321	-21.679	74.000		
9608.000		10.394	42.030	52.424	-21.576	74.000		
Average								
<b>Detector:</b>								
Vertical								
Peak Detector:								
4804.000		2.923	44.200	47.122	-26.878	74.000		
7206.000		9.988	42.490	52.479	-21.521	74.000		
9608.000		10.847	41.860	52.707	-21.293	74.000		
Average								
<b>Detector:</b>								

--

Note:

-

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	VUZE-XR Camera							
Test Item	:	Harmonic R	Harmonic Radiated Emission						
Test Site	:	No.3 OATS	No.3 OATS						
Test date	:	2018/09/03							
Test Mode	:	Mode 1: Tra	nsmit - 1Mbps (G	FSK)(2441MHz)					
Frequency		Correct	Reading	Measurement	Margin	Limit			
		Factor	Level	Level					
MHz		dB	dBµV	dBµV/m	dB	dBµV/m			
Horizontal									
Peak Detector:									
4882.000		2.025	44.390	46.415	-27.585	74.000			
7323.000		9.762	42.280	52.041	-21.959	74.000			
9764.000		9.682	41.090	50.771	-23.229	74.000			
Average									
<b>Detector:</b>									
Vertical									
Peak Detector:									
4882.000		2.488	43.530	46.018	-27.982	74.000			
7323.000		10.375	42.750	53.124	-20.876	74.000			
9764.000		10.315	41.350	51.665	-22.335	74.000			
Average									
<b>Detector:</b>									

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



: \	VUZE-XR Camera						
: I	Harmonic Radiated Emission						
: 1	No.3 OATS						
: 2	2018/09/03						
: 1	Mode 1: Tra	nsmit - 1Mbps (G	FSK)(2480MHz)				
(	Correct	Reading	Measurement	Margin	Limit		
]	Factor	Level	Level				
	dB	dBµV	dBµV/m	dB	$dB\mu V/m$		
	2.582	43.260	45.842	-28.158	74.000		
1	10.555	40.750	51.305	-22.695	74.000		
1	10.206	43.230	53.436	-20.564	74.000		
	3.398	42.920	46.319	-27.681	74.000		
1	11.214	41.270	52.484	-21.516	74.000		
1	11.245	42.100	53.345	-20.655	74.000		
		<ul> <li>VUZE-XR 0</li> <li>Harmonic R</li> <li>No.3 OATS</li> <li>2018/09/03</li> <li>Mode 1: Tra</li> <li>Correct Factor dB</li> <li>2.582</li> <li>10.555</li> <li>10.206</li> <li>3.398</li> <li>11.214</li> <li>11.245</li> </ul>	<ul> <li>VUZE-XR Camera         <ul> <li>Harmonic Radiated Emission</li> <li>No.3 OATS</li> <li>2018/09/03</li> <li>Mode 1: Transmit - 1Mbps (G</li> </ul> </li> <li>Correct Reading         <ul> <li>Factor</li> <li>Level</li> <li>dB</li> <li>dBµV</li> </ul> </li> <li>2.582</li> <li>43.260</li> <li>10.555</li> <li>40.750</li> <li>10.206</li> <li>43.230</li> <li>3.398</li> <li>42.920</li> <li>11.214</li> <li>41.270</li> <li>11.245</li> <li>42.100</li> </ul>	<ul> <li>VUZE-XR Camera         <ul> <li>Harmonic Radiated Emission</li> <li>No.3 OATS</li> <li>2018/09/03</li> <li>Mode 1: Transmit - 1Mbps (GFSK)(2480MHz)</li> </ul> </li> <li>Correct Reading Measurement         <ul> <li>Factor</li> <li>Level</li> <li>dB</li> <li>dBµV</li> <li>dBµV/m</li> </ul> </li> <li>2.582 43.260 45.842         <ul> <li>10.555 40.750 51.305</li> <li>10.206 43.230 53.436</li> <li>3.398 42.920 46.319</li> <li>11.214 41.270 52.484</li> <li>11.245 42.100 53.345</li> </ul> </li> </ul>	<ul> <li>VUZE-XR Camera         <ul> <li>Harmonic Radiated Emission</li> <li>No.3 OATS</li> <li>2018/09/03</li> <li>Mode 1: Transmit - 1Mbps (GFSK)(2480MHz)</li> </ul> </li> <li>Correct Reading Measurement Margin Factor Level Level         <ul> <li>dB</li> <li>dBµV</li> <li>dBµV/m</li> <li>dB</li> </ul> </li> <li>2.582 43.260 45.842 -28.158         <ul> <li>10.555 40.750 51.305 -22.695             <li>10.206 43.230 53.436 -20.564</li> </li></ul> </li> <li>3.398 42.920 46.319 -27.681         <ul> <li>11.214 41.270 52.484 -21.516             <li>11.245 42.100 53.345 -20.655</li> </li></ul> </li> </ul>		

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	VUZE-XR Camera							
Test Item	:	Harmonic R	Harmonic Radiated Emission						
Test Site	:	No.3 OATS	No.3 OATS						
Test date	:	2018/09/03							
Test Mode	:	Mode 2: Tra	Mode 2: Transmit - 3Mbps (8DPSK)(2402MHz)						
E.		0			N4 <sup>1</sup>	<b>T</b> • •/			
Frequency		Correct	Reading	Measurement	Margin	Limit			
		Factor	Level	Level					
MHz		dB	dBµV	dBµV/m	dB	dBµV/m			
Horizontal									
<b>Peak Detector:</b>									
4804.000		2.511	42.820	45.330	-28.670	74.000			
7206.000		9.511	42.710	52.221	-21.779	74.000			
9608.000		10.394	42.260	52.654	-21.346	74.000			
Average									
<b>Detector:</b>									
Vertical									
Peak Detector:									
4804.000		2.923	43.100	46.022	-27.978	74.000			
7206.000		9.988	43.520	53.509	-20.491	74.000			
9608.000		10.847	41.950	52.797	-21.203	74.000			
Average									
<b>Detector:</b>									

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	VUZE-XR Camera
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2018/09/03
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2441MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	dBµV/m
Horizontal					
Peak Detector:					
4882.000	2.025	44.430	46.455	-27.545	74.000
7323.000	9.762	42.600	52.361	-21.639	74.000
9764.000	9.682	41.360	51.041	-22.959	74.000
Average					
<b>Detector:</b>					
Vertical					
Peak Detector:					
4882.000	2.488	43.740	46.228	-27.772	74.000
7323.000	10.375	42.600	52.974	-21.026	74.000
9764.000	10.315	41.510	51.825	-22.175	74.000
Average					
Detector:					

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- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	VUZE-XR Camera						
Test Item	:	Harmonic Radiated Emission						
Test Site	:	No.3 OATS						
Test date	:	2018/09/03						
Test Mode	:	Mode 2: Tra	nsmit - 3Mbps (8I	DPSK) (2480MHz)				
Frequency		Correct	Reading	Measurement	Margin	Limit		
		Factor	Level	Level				
MHz		dB	dBµV	$dB\mu V/m$	dB	dBµV/m		
Horizontal								
Peak Detector:								
4960.000		2.582	43.010	45.592	-28.408	74.000		
7440.000		10.555	40.700	51.255	-22.745	74.000		
9920.000		10.206	43.310	53.516	-20.484	74.000		
Average								
<b>Detector:</b>								
Vertical								
Peak Detector:								
4960.000		3.398	42.960	46.359	-27.641	74.000		
7440.000		11.214	40.990	52.204	-21.796	74.000		
9920.000		11.245	42.460	53.705	-20.295	74.000		
Average								
<b>Detector:</b>								

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	VUZE-XR Camera
Test Item	:	General Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2018/09/04
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK) (2441MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	$dB\mu V/m$
Horizontal					
105.913	-7.662	34.391	26.729	-16.771	43.500
164.957	-9.943	36.665	26.722	-16.778	43.500
419.406	-0.249	36.061	35.812	-10.188	46.000
491.101	1.527	32.073	33.600	-12.400	46.000
713.217	3.793	27.195	30.989	-15.011	46.000
791.942	6.389	28.803	35.192	-10.808	46.000
Vertical					
44.058	-10.725	37.594	26.868	-13.132	40.000
107.319	-4.107	35.029	30.922	-12.578	43.500
378.638	0.816	26.492	27.308	-18.692	46.000
540.304	2.156	25.229	27.385	-18.615	46.000
614.812	1.709	26.331	28.040	-17.960	46.000
791.942	2.684	32.485	35.169	-10.831	46.000

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	VUZE-XR Camera
Test Item	:	General Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2018/09/04
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2441MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	dBµV/m
Horizontal					
107.319	-7.605	35.056	27.452	-16.048	43.500
419.406	-0.249	36.502	36.253	-9.747	46.000
491.101	1.527	33.549	35.076	-10.924	46.000
565.609	1.958	26.920	28.878	-17.122	46.000
713.217	3.793	27.615	31.409	-14.591	46.000
791.942	6.389	29.346	35.735	-10.265	46.000
Vertical					
104.507	-4.889	34.806	29.917	-13.583	43.500
179.014	-0.878	26.177	25.300	-18.200	43.500
377.232	0.644	25.949	26.593	-19.407	46.000
540.304	2.156	24.223	26.379	-19.621	46.000
614.812	1.709	25.683	27.392	-18.608	46.000
791.942	2.684	28.828	31.512	-14.488	46.000

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 8. No emission found between lowest internal used/generated frequency to 30MHz.



Product	:	VUZE-XR	Camera			
Test Item	:	General Ra	diated Emission			
Test Site	:	No.3 OATS	5			
Test date	:	2018/09/04				
Test Mode	:	Mode 3: Cl	narge mode			
Frequency		Correct	Reading	Measurement	Margin	Limit
		Factor	Level	Level		
MHz		dB	dBµV	$dB\mu V/m$	dB	$dB\mu V/m$
Horizontal						
299.913		-4.722	29.052	24.330	-21.670	46.000
419.406		-0.249	36.481	36.232	-9.768	46.000
467.203		3.297	27.358	30.655	-15.345	46.000
614.812		3.005	24.731	27.736	-18.264	46.000
713.217		3.793	26.823	30.617	-15.383	46.000
791.942		6.389	30.026	36.415	-9.585	46.000
Vertical						
59.522		-11.334	42.950	31.617	-8.383	40.000
381.449		0.721	26.893	27.615	-18.385	46.000
540.304		2.156	25.284	27.440	-18.560	46.000
614.812		1.709	24.189	25.898	-20.102	46.000
791.942		2.684	28.467	31.151	-14.849	46.000
900.188		1.948	24.752	26.700	-19.300	46.000

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

## 5. **RF Antenna Conducted Test**

## 5.1. Test Setup



### 5.2. Limits

According to FCC Section 15.247(d). In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

#### 5.3. Test Procedure

The EUT was setup to ANSI C63.4, 2014; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

#### 5.4. Uncertainty

± 1.20dB



## 5.5. Test Result of RF Antenna Conducted Test

Product	:	VUZE-XR Camera
Test Item	:	RF Antenna Conducted Test
Test Site	:	No.3 OATS
Test date	:	2018/09/14
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)

#### **Figure Channel 00:** Spurious Emission(30MHz-25GHz) -16.44 Reading Value 20 RBW: 100k, VBW: 1M Sweep Time: Auto 10 0 -10 -20 dBm -30 -40 -50 -<mark>60</mark> -70 5 10 15 20 25 GHz







Note: The above test pattern is synthesized by multiple of the frequency range.



- Product : VUZE-XR Camera
- Test Item : RF Antenna Conducted Test
- Test Site
- ite : No.3 OATS ate : 2018/09/14

Test date : Test Mode :

lode : Mode 2: Transmit - 3Mbps (8DPSK)











Note: The above test pattern is synthesized by multiple of the frequency range.



## 6. Band Edge

#### 6.1. Test Setup

#### **RF Radiated Measurement:**

#### Above 1GHz



## **RF** Conducted Measurement



## 6.2. Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

## 6.3. Test Procedure

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

The bandwidth setting below 1GHz and above 1GHz on the field strength meter is 120 kHz and 1MHz, respectively.

## 6.4. Uncertainty

- $\pm$  4.08 dB above 1GHz
- ± 4.22 dB below 1GHz



#### 6.5. **Test Result of Band Edge**

Product	:	VUZE-XR Camera
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2018/09/08
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK) (2402MHz)

#### **RF Radiated Measurement (Horizontal):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Peak Limit (dBµV/m)	Arerage Limit (dBµV/m)	Result
00 (Peak)	2390.000	-2.687	50.909	48.222	74.00	54.00	Pass
00 (Peak)	2400.000	-2.660	66.751	64.091			
00 (Peak)	2402.100	-2.657	98.458	95.801			
00 (Average)	2390.000	-2.687	38.403	35.716	74.00	54.00	Pass
00 (Average)	2400.000	-2.660	51.364	48.704			
00 (Average)	2402.000	-2.657	98.226	95.569			





#### **Figure Channel 00:**

#### **Horizontal** (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "\*", means this data is the worst emission level.
- 1. 2. 3. 4.

- 5. Measurement Level = Reading Level + Correction Factor.
- 6. The average measurement was not performed when the peak measured data is under the limit of average detection.



Product	:	VUZE-XR Camera
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2018/09/08
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK) (2402MHz)

#### **RF Radiated Measurement (VERTICAL):**

Channel No.	Frequency	Correct Factor	Reading Level	<b>Emission Level</b>	Peak Limit	Arerage Limit	Degult
	(MHz)	(dB)	(dBµV)	(dBµV/m)	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
00 (Peak)	2390.000	-4.159	47.549	43.390	74.00	54.00	Pass
00 (Peak)	2400.000	-4.171	63.020	58.849			
00 (Peak)	2401.800	-4.171	95.950	91.779			
00 (Average)	2390.000	-4.159	37.487	33.328	74.00	54.00	Pass
00 (Average)	2400.000	-4.171	49.219	45.048			
00 (Average)	2402.000	-4.171	95.728	91.557			





- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. 1.
- 1. 2. 3. 4.
- Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "\*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correction Factor.
- 6. The average measurement was not performed when the peak measured data is under the limit of average detection.



Product	:	VUZE-XR Camera
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2018/09/08
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK) (2480MHz)

#### **RF Radiated Measurement (Horizontal):**

Channel No.	Frequency	Correct Factor	Reading Level	<b>Emission Level</b>	Peak Limit	Arerage Limit	Docult
	(MHz)	(dB)	(dBµV)	(dBµV/m)	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
78 (Peak)	2479.800	-2.605	98.075	95.470			Pass
78 (Peak)	2483.500	-2.601	48.617	46.015	74.00	54.00	Pass
78 (Average)	2480.000	-2.605	97.773	95.168			Pass
78 (Average)	2483.500	-2.601	37.552	34.950	74.00	54.00	Pass

#### **Figure Channel 78:**

#### Horizontal (Peak)



#### **Figure Channel 78:**

#### Horizontal (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "\*", means this data is the worst emission level. 1.
- 2. 3.
- 4.
- 5. Measurement Level = Reading Level + Correction Factor.
- 6. The average measurement was not performed when the peak measured data is under the limit of average detection.



Product	:	VUZE-XR Camera
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2018/09/08
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK) (2480MHz)

#### **RF Radiated Measurement (VERTICAL):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Peak Limit (dBµV/m)	Arerage Limit (dBµV/m)	Result
78 (Peak)	2479.800	-3.978	96.077	92.099			Pass
78 (Peak)	2483.500	-3.966	47.874	43.907	74.00	54.00	Pass
78 (Average)	2480.000	-3.978	95.747	91.769			Pass
78 (Average)	2483.500	-3.966	37.432	33.465	74.00	54.00	Pass

#### Figure Channel 78:

#### **VERTICAL** (Peak)



#### Figure Channel 78:

#### **VERTICAL** (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "\*", means this data is the worst emission level.
- 1. 2. 3.
- 4.
- 5. Measurement Level = Reading Level + Correction Factor.
- The average measurement was not performed when the peak measured data is under the limit of 6. average detection.



Product	:	VUZE-XR Camera
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2018/09/08
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2402MHz)

#### **RF Radiated Measurement (Horizontal):**

Channal No.	Frequency	Correct Factor	Reading Level	<b>Emission Level</b>	Peak Limit	Arerage Limit	Docult
Channel No.	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
00 (Peak)	2390.000	-2.687	49.121	46.434	74.00	54.00	Pass
00 (Peak)	2400.000	-2.660	64.702	62.042			
00 (Peak)	2401.900	-2.658	94.724	92.066			
00 (Average)	2390.000	-2.687	37.702	35.015	74.00	54.00	Pass
00 (Average)	2400.000	-2.660	54.617	51.957			
00 (Average)	2402.000	-2.657	91.274	88.617			





#### Horizontal (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "\*", means this data is the worst emission level. Measurement Level = Reading Level + Correction Factor. 1.
- 2. 3.
- 4. 5.
- The average measurement was not performed when the peak measured data is under the limit of 6. average detection.



Product	:	VUZE-XR Camera
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2018/09/08
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2402MHz)

#### **RF Radiated Measurement (VERTICAL):**

Channel No.	Frequency	Correct Factor	Reading Level	<b>Emission Level</b>	Peak Limit	Arerage Limit	Decult
Channel No.	(MHz)	(dB)	(dBµV)	(dBµV/m)	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
00 (Peak)	2390.000	-4.159	47.751	43.592	74.00	54.00	Pass
00 (Peak)	2400.000	-4.171	61.344	57.173			
00 (Peak)	2402.000	-4.171	92.218	88.047			
00 (Average)	2390.000	-4.159	37.521	33.362	74.00	54.00	Pass
00 (Average)	2400.000	-4.171	52.441	48.270			
00 (Average)	2402.000	-4.171	88.782	84.611			

#### **Figure Channel 00:**

#### VERTICAL (Peak)



#### **Figure Channel 00:**

#### **VERTICAL** (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. 1.
- 2. 3.
- Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "\*", means this data is the worst emission level.
- 4.
- 5. Measurement Level = Reading Level + Correction Factor.
- The average measurement was not performed when the peak measured data is under the limit of 6. average detection.



Product	:	VUZE-XR Camera
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2018/09/08
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2480MHz)

#### **RF Radiated Measurement (Horizontal):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Peak Limit (dBµV/m)	Arerage Limit (dBµV/m)	Result
78 (Peak)	2480.000	-2.605	94.101	91.496			Pass
78 (Peak)	2483.500	-2.601	47.426	44.824	74.00	54.00	Pass
78 (Average)	2480.000	-2.605	90.700	88.095			Pass
78 (Average)	2483.500	-2.601	37.149	34.547	74.00	54.00	Pass

#### **Figure Channel 00:**

#### Horizontal (Peak)



#### **Figure Channel 00:**

#### Horizontal (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "\*", means this data is the worst emission level.
- 1. 2. 3.
- 4. 5.
- Measurement Level = Reading Level + Correction Factor. The average measurement was not performed when the peak measured data is under the limit of 6. average detection.



Product	:	VUZE-XR Camera
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2018/09/08
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2480MHz)

#### **RF Radiated Measurement (VERTICAL):**

Channel No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Arerage Limit	Result
0	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	(dBµV/m)	(dBµV/m)	1105010
78 (Peak)	2479.900	-3.978	92.060	88.082			Pass
78 (Peak)	2483.500	-3.966	48.113	44.146	74.00	54.00	Pass
78 (Average)	2480.000	-3.978	88.682	84.704			Pass
78 (Average)	2483.500	-3.966	37.385	33.418	74.00	54.00	Pass

#### **Figure Channel 78:**

#### VERTICAL (Peak)



#### Figure Channel 78:

#### **VERTICAL** (Average)



- All readings above 1GHz are performed with peak and/or average measurements as necessary. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. "\*", means this data is the worst emission level. 1.
- 2. 3.
- 4.
- 5. Measurement Level = Reading Level + Correction Factor.
- The average measurement was not performed when the peak measured data is under the limit of 6. average detection.



Product	:	VUZE-XR Camera
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)(Hopping off)

Measurement Level	Result
$\Delta$ (dB)	
> 20	PASS

## **Figure Channel 00:**

🊺 Kej	ysight	Spect	rum /	Analyzer - Sw	rept SA											- 0 ×
Cen	ter	Fre	RF q	50 Ω 2.39700	AC	iHz		SEN	SE:INT	Avg	µ ∫ype:	LIGN AUTO	09:47:58 A TRAC	M Sep 14, 20 E 1 2 3 4 5 PE M WWW	18 5 6	Frequency
10 di	Ref Offset 0.5 dB         Mkr3 2.399 596 65 GHz           0 dB/div         Ref 20.50 dBm													Auto Tune		
Log 10.5 0.500 -9.50													Å			Center Freq 2.397000000 GHz
-19.5 -29.5 -39.5														-16.33 dE	<u>9m</u>	<b>Start Freq</b> 2.390000000 GHz
-49.5 -59.5 -69.5	sænde	-		winnerly.				alay antal A	an a	atter and and a	<b>.</b>	<u>)</u>		- North Andrews	~	<b>Stop Freq</b> 2.404000000 GHz
Star #Re	t 2.3 s B1	390 W 1	000	) GHz kHz	×	#\	/BW 30	0 kHz	FUN	Sweep	) (#9	Swp) 2.6	top 2.404 667 ms (4	1000 GH 0001 pt	iz s)	CF Step 1.400000 MHz <u>Auto</u> Man
1 2 3 4 5	N N N	1 1	f f f		2.401 833 2.400 000 2.399 596	50 GHz 00 GHz 65 GHz	-5 -5	3.67 dB 5.10 dB 4.10 dB	m m m						ш	Freq Offset 0 Hz
7 8 9 10 11															•	
MSG												STATUS		,		

## Figure Channel 78:

🇾 Ke	ysight S	Spectr	um A	nalyzer - Sw	ept SA										- 0 ×
Cen	L Iter	Fre	RF q 2	50 Ω 2.48900	AC 00000 GI	Ηz		SEN		Avg	Туре	Log-Pwr	10:08:45 A	M Sep 14, 2018	Frequency
10 d	B/div	, F	Ref Ref	Offset 0.0	5 dB dBm	NO: Fast Gain:Low	, <b>`</b>	#Atten: 3	0 dB		N	/kr3 2.4	189 928 -52.	95 GHz 81 dBm	Auto Tune
10.5 0.500		)													Center Freq 2.489000000 GHz
-19.5 -29.5 -39.5				h					.3					-16.69 dBm	Start Freq 2.478000000 GHz
-49.5 -69.5 -69.5	ľ			North Contraction	2 	en de la compañía de	tradina	<u>4,10</u>	where the state of the	Nikomhadi	ne los e	ender som	annanaina	ennumant	<b>Stop Freq</b> 2.50000000 GHz
Star #Re	t 2.4 s BV	1780 N 10	00 0 00 1	GHz (Hz	×	#V	BW	300 kHz	51	Swee	p (#	Swp) 2.0	Stop 2.5 667 ms (4	0000 GHz 0001 pts)	CF Step 2.200000 MHz <u>Auto</u> Man
1 2 3 4 5 6 7 8 9 10 11	N N N		f		x 2.480 160 9 2.483 500 ( 2.489 928 9	95 GHz 10 GHz 15 GHz		3.31 dE -56.35 dE -52.81 dE	3m 3m 3m	NCTION			FUNCTI	BN VALUE	Freq Offset 0 Hz
MSG												STATUS	5		



Product	:	VUZE-XR Camera
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (Hopping off)

Measurement Level	Result
$\Delta$ (dB)	
> 20	PASS

## Figure Channel 00:

🇾 Ke	ysight	Spect	rum	Analyzer - :	Swept	SA													
ເxv ℝ Cen	L Iter	Fre	RF ≥q	50 2.397	Ω 000	AC 000	GHz	2	_	SE	NSE:I	NT	Avg	Туре	LIGN AUTO	11:36:40 A TRA	M Sep 14, 2 CE 1 2 3 4 PE M WWW	018 5 6	Frequency
10 d	B/div	Information         #Atten: 30 dB         Der[PNNNN           Ref Offset 0.5 dB         Mkr3 2.398 659 70 GHz												Auto Tune					
Log 10.5 0.500 -9.50																1 Juny		_	Center Freq 2.397000000 GHz
-19.5 -29.5 -39.5							+										-22.97	æm	Start Freq 2.390000000 GHz
-49.5 -59.5 -69.5		www.W	m	nites to the		Warnage	~~~~	unders rol	Vrod	(nobblennd)	<b>i</b>	at and and a	<b>1</b> 3	al an	2 <sup>2</sup> /www			<b>L</b>	<b>Stop Freq</b> 2.404000000 GHz
Star #Re	rt 2. s B	390 W 1	000	) GHz kHz		~		#V	вw	300 kHz	:	FUNC	Swee	p (#	Swp) 2.6	top 2.40 667 ms (4	4000 Gi 0001 p	Hz ts)	<b>CF Step</b> 1.400000 MHz <u>Auto</u> Man
1 2 3 4 5	N N N	1 1	f f		2.4 2.4 2.3	401 83 400 00 398 65	2 10 0 00 9 70	GHz GHz GHz		-2.97 d -57.27 d -54.14 d	Bm Bm Bm								Freq Offset 0 Hz
7 8 9 10 11																			
MSG	-				-	-	-	-	-	m				-	STATUS		•		

## Figure Channel 78:

🇾 Ke	ysight Sp	pectrum	Analyzer - Sv	wept SA								- J -×-
Cen	ter F	req	50 s 2.4890	00000 GH	łz	SE	NSE:INT	Avg T	ALIGN AUTO ype: Log-Pwr	11:54:41 A	M Sep 14, 2018 CE 1 2 3 4 5 6 PE M WWWWW	Frequency
10 d	Ref Offset 0.5 dB         Mkr3 2.488 252 00 GHz           JB/div         Ref 20.50 dBm											Auto Tune
10.5 0.500 -9.50		Å	٩									Center Freq 2.489000000 GHz
-19.5 -29.5 -39.5											-23.71 dBm	Start Freq 2.478000000 GHz
-49.5 -59.5 -69.5	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			<sup>2</sup>	alamatin kuntu		el administration (	6 martine and the	Martin	terter skildede der	unes on anno 1.4 Anno	<b>Stop Freq</b> 2.50000000 GHz
Star #Re	t 2.4 s BW	7800 / 100	GHz kHz	×	#VB	W 300 kHz	61	Sweep	(#Swp) 2	Stop 2.5 .667 ms (4	0000 GHz 0001 pts)	CF Step 2.200000 MHz <u>Auto</u> Man
1 2 3 4 5 6 7 8 9 10 11	N N N	1 f 1 f		2.479 840 8 2.483 500 0 2.488 252 0	5 GHz 0 GHz 0 GHz	-3.71 d -59.20 d -55.19 d	Bm Bm Bm Bm					Freq Offset 0 Hz
MSG					_	m			STAT	us	•	



Product	:	VUZE-XR Camera
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)(Hopping on)

Measurement Level	Result
$\Delta$ (dB)	
> 20	PASS

## Figure Channel 00 Hopping:

Keysight Spectrum Analyzer - Swept SA				- J <u>×</u>
RL         RF         50 Ω         AC           Center Freq 2.397000000         β	GHz	ALIGN AUTO Avg Type: Log-Pwr	09:50:37 AM Sep 14, 2018 TRACE 1 2 3 4 5 6	Frequency
Ref Offset 0.5 dB	PNO: Fast , Trig: Free R IFGain:Low #Atten: 30 d	мкr3 2.3	98 756 65 GHz -55.14 dBm	Auto Tune
10.5 0.500				Center Freq 2.397000000 GHz
-19.5			-15.49 tielm	Start Freq 2.390000000 GHz
-49.5 -59.5	And the second			<b>Stop Freq</b> 2.404000000 GHz
Start 2.390000 GHz #Res BW 100 kHz	#VBW 300 kHz	S Sweep (#Swp) 2.6	top 2.404000 GHz 67 ms (40001 pts)	CF Step 1.400000 MHz <u>Auto</u> Man
1         N         1         f         2.402.83           2         N         1         f         2.400.00           3         N         1         f         2.398.75           4         6         6         6         6	2 40 GHz 3.57 dBm 0 00 GHz -57.46 dBm 6 65 GHz -55.14 dBm		E	Freq Offset 0 Hz
7         8           9         10           11         11				
MSG		STATUS		

## Figure Channel 78 Hopping:

🌉 Keysight Spectrui	m Analyzer - Sw	/ept SA										
XI RL Center Fred	RF 50 Ω		7	SEN	SE:INT	Avg T	ALIGN AUTO	10:12:15 A TRAC	M Sep 14, 2018	Frequency		
R di Richini R	PRO: Fast IFGaint.ow         Trig: Free Run #Atten: 30 dB         DTEE MUTURE TOPE IN NUM HET PINNEN BUT PINNEN EET PINNEN BUT PINNEN EET PINNEN HET PINNEN EET PINNEN EET PINNEN HET PINNEN H											
10 dB/div R Log 10.5 1 0.500	er 20.50 (							-00.		Center Fre 2.489000000 GH		
-19.5	4								-16.58 dBm	Start Fre 2.478000000 GH		
49.5 -69.5 -69.5	- Hun	2 	ing and an formation	aperiation of the second s	ulatter at low the	and a share	en alter mennen er	n a satura a satura da satura d	3	Stop Fre 2.500000000 GH		
Start 2.4780 Res BW 10	0 GHz 0 kHz	×	#VBW	/ 300 kHz	FUN	Sweep	(#Swp) 2.0	Stop 2.50 667 ms (4	0000 GHz 0001 pts)	CF Ste 2.200000 MH <u>Auto</u> Ma		
1 N 1 2 N 1 3 N 1 4 5 6	f f f	2.479 160 50 2.483 500 00 2.499 923 00	GHz GHz GHz	3.42 dB -57.05 dB -55.11 dB	m m m				=	Freq Offs 0 H		
/ 8 9 10 11												
ASG							STATUS	6		L		



Product	:	VUZE-XR Camera
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (Hopping on)

Measurement Level	Result
$\Delta$ (dB)	
> 20	PASS

## Figure Channel 00 Hopping:

🎉 Keysight Sp	ectrum /	Analyzer - Swe	pt SA											- J - X-
Center F	RF req 2	50 Ω 2.39700	AC	z	SE	NSE:INT		Avg T	ALIGN / ype: Log-	AUTO •Pwr	11:39:40 / TRA	AM Sep 14, 2 KCE 1 2 3 4	018 5 6	Frequency
10 dB/div	Ref	Offset 0.5	dB IBm	NO:Fast Gain:Low	Trig: Fre #Atten: 3	e Run i0 dB			Mkr3	3 2.3	90 282 -54	80 GI	Hz	Auto Tune
10.5 0.500											putting	un na	$\diamond$	Center Freq 2.397000000 GHz
-19.5 -29.5 -39.5												-23.16	dBm	Start Freq 2.39000000 GHz
-49.5 -69.5	umu <b>n</b> u	Joon and the second	an a	Vernaung	When a start water and a start with the	•••••		petropos (the second	and the second	y Albert				Stop Freq 2.404000000 GHz
Start 2.3 #Res BW	90000	) GHz kHz	*	#VB	W 300 kHz		EUMC	Sweep	) (#Swp)	S ) 2.6	top 2.40 67 ms (4	4000 G 40001 p	Hz ts)	<b>CF Step</b> 1.400000 MHz <u>Auto</u> Man
1 N 2 N 3 N 4 5	1 f 1 f 1 f	2222	2.403 836 55 2.400 000 00 2.390 282 80	5 GHz ) GHz ) GHz	-3.16 d -56.95 d -54.72 d	Bm Bm Bm								Freq Offset 0 Hz
6 7 8 9 10 11														
MSG					m				4	STATUS		•		

## Figure Channel 78 Hopping:

🎉 Keysight	Spectrum	Analyzer - Sw	vept SA								- 0 ×
Center	Freq	៍ 50 ជ 2.4890	2 AC 00000 GH	łz	SEN	SE:INT	Avg T	ALIGN AUT	TO 11:57:38	AM Sep 14, 2018 ACE 1 2 3 4 5 6	Frequency
10 dB/di	Re v <b>R</b> e	f Offset 0. f 20.50	P IF0 5 dB dBm	NO: Fast ( Gain:Low	Trig: Free #Atten: 30		Mkr3 :	80 GHz	Auto Tune		
10.5 0.500	mart	4									Center Freq 2.489000000 GHz
-19.5 -29.5 -39.5										-23.78 dBm	Start Fred 2.478000000 GHz
-49.5 -59.5 -69.5		- Marine	2 2				**************************************		**************************************	nengluetul#10	Stop Frec 2.50000000 GH;
Start 2. #Res B	47800 W 100	GHz kHz	·	#VB	W 300 kHz	EI	Sweep	(#Swp)	Stop 2.5 2.667 ms (	0000 GHz 40001 pts)	CF Step 2.200000 MHz <u>Auto</u> Man
1 N 2 N 3 N 4 5	1 f 1 f 1 f		2.479 840 8 2.483 500 0 2.496 774 8	5 GHz 0 GHz 0 GHz	-3.78 dB -57.72 dB -55.05 dB	m m m					Freq Offset 0 Hz
7 8 9 10 11											
MSG					m			ST/	ATUS	•	



## 7. Channel Number

## 7.1. Test Setup



## 7.2. Limit

Frequency hopping systems operating in the 2400-2483.5 MHz bands shall use at least 15 hopping frequencies.

## **7.3.** Test Procedure

The EUT was setup to ANSI C63.4, 2014; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

## 7.4. Uncertainty

N/A



## 7.5. Test Result of Channel Number

Product	:	VUZE-XR Camera
Test Item	:	Channel Number
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)

Frequency Range	Measurement	Required Limit	Result		
(MHz)	(Hopping Channel)	(Hopping Channel)			
2402 ~ 2480	79	>15	Pass		

#### 2402-2421MHz

#### 2422-2441MHz

🐹 Keysight Spectrum Analyzer - Swept SA		🔀 🚺 Keysight Spectrum Analyzer - Swept SA 👘 🖃 🐼
RL         RF         50 Ω         AC         SENSE:INT         ALIGN AUTO           Center Freq 2.411000000 GHz          Avg Type: Log-Pwr	10:15:09 AM Sep 14, 2018 TRACE 1 2 3 4 5 6 Frequency	OP         RL         RF         50 Ω         AC         SENSE:INT         ALIGN AUTO         10:15:48 AM Sep 14, 2018         Frequency           Center Freq 2,431500000 GHz         Avg Type: Log-Pwr         TR-4CE 12 3 4 5 6         Frequency
PNO: Fast Trg: Pree Run IFGain:Low #Atten: 30 dB Ref Offset 0.5 dB 10 dB/div Ref 20.50 dBm	2 2.421 000 GHz 1.37 dBm	ne Ref Offset 0.5 dB Aktor 100 Free Kun Carlos Aktor 10 dB Kir 2.441 00 GHz Aktor 10 dB Kir 2.441 00 GHz Aktor 10 dB Kir 2.445 dBm Aktor 10 dB Kir 2.45 dBm
	2 Center Freq 2.411000000 GHz	eq 10.5 10.5 1.05 9.50 9.50 9.50 9.50 9.50 1.05 1.05 1.05 1.05 1.05 1.05 1.05 1
195 -95 -305	2.400500000 GHz	eq 195 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
485	2.421500000 GHz	485 Stop Fre 885 2441600000 GH
Start 2.40050 GHz #Res BW 100 kHz #VBW 100 kHz Sweep (#Swp) 1008 M006 HEG (SQL X Y FUNCTION /	Stop 2.42150 GHz 2.533 ms (1001 pts) EUNOTION WAUE	ep Start 2.42150 GHz stop 2.44150 GHz CF5te tr₂ #Res BW 100 kHz #VBW 100 kHz Sweep (#Swp) 2.467 ms (100 1 pts) m 105 BW056 Biol Stat x y RANKION WORD # Autonomous Ma
1         N         1         1         2.402.000 GHz         2.30 dBm           2         N         1         1         2.422.000 GHz         1.37 dBm           3         3         4         5         5         5	Freq Offset	1         1         1         242200 GHz         1.55 dBm           2         N         1         f         2.42100 GHz         2.45 dBm           3
6         -		6         -
MSG STAT	us	MSG STATUS

#### 2442-2461MHz

#### 2462-2480MHz

Keysight Spectrum Analyzer - Swept SA			Keysight Spectrum Analyzer - Swept SA	(C) (C)
	ALIGN AUTO 10:16:20 AM Sep 14, 2018 Avg Type: Log-Pwr TRACE 1 2 3 4 5 6 Type Mutane	Frequency	μ         RL         RF         50 Ω         AC         SENSE:INT         ALIGN AUTO         10:17:05 AM Sep 14, 2018           Center Freq 2.471500000 GHz         Tract         [1 2:3 4:5 6         Frequent	тсу
PN0: Fast 🕞 Ing: Pree Run IFGain:Low #Atten: 30 dB	DET P NNNN	Auto Tuno	PNO: Fast Ing: Free Run Der PNNNNN IFGain:Low #Atten: 30 dB Der PNNNNN	Tune
Ref Offset 0.5 dB 10 dB/div Ref 20.50 dBm	Mkr2 2.461 00 GHz 2.07 dBm	Auto Tune	Ref Offset 0.5 dB Mkr2 2.480 00 GHz 4000 10 dB/div Ref 20.50 dBm 2.50 dBm	, rune
	www.	Center Freq 2.451500000 GHz	req 105 112 0.50 123 0.50 124 0.50 125 0.5	e <b>r Freq</b> 00 GHz
-19.6 -29.5 -39.5		Start Freq 2.441500000 GHz	req 195 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	rt Freq 00 GHz
49.5		Stop Freq 2.461500000 GHz	495         Stop           495         24815000           24815000         24815000	p Freq 00 GHz
Start 2.44150 GHz #Res BW 100 kHz #VBW 100 kHz	Stop 2.46150 GHz Sweep (#Swp) 2.467 ms (1001 pts)	CF Step 2.000000 MHz Auto Man	tep Start 2.46150 GHz Stop 2.48150 GHz CC Hri-z #Res BW 100 kHz #VBW 100 kHz Sweep (#Swp) 2.467 ms (100 rpt) 2.400 Auto	F Step 00 MHz Man
Link         1         A         1         C         A422 00 GHz         Z 66 dBm           1         N         1         f         2.442 00 GHz         2.66 dBm         3           3         4         -		Freq Offset 0 Hz	N         1         r         2.452.00 GHz         2.36 dBm         Control         Contro <thcontro< th=""> <thcontrol< th=""></thcontrol<></thcontro<>	Offset 0 Hz
MSG	STATUS		MSG STATUS	



Product	:	VUZE-XR Camera
Test Item	:	Channel Number
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK)

Frequency Range	Measurement	Required Limit	Result		
(MHz)	(Hopping Channel)	(Hopping Channel)			
2402 ~ 2480 79		>15	Pass		

#### 2402-2421MHz

### 2422-2441MHz

🚺 Keysight Spectrum Analyzer - Swept SA			🚂 鼶 Keysight Spectrum Analyzer - Swept SA 👘
M         RF         50 Ω         AC         SENSE:INT         ALIGN AUTO           Center Freq 2.411000000 GHz         Avg Type: Log-Pw         Avg Type: Log-Pw         Avg Type: Log-Pw	TRACE 1 2 3 4 5 6	Frequency	φ         RL         RF         50 Ω         AC         SENSE:INT         ALIGN AUTO         12:01:48 PM Sep 14, 2018           Center Freq 2.431500000 GHz         Avg Type: Log-Pwr         TRACE 1 2 3 4 5 6         Frequer
PN0: Fast Trig: Free Run IFGain:Low #Atten: 30 dB	2 2 421 000 GHz	Auto Tune	PRO: Fast Trig: Free Run Dree P WWWWWW IFGaint.ow #Atten: 30 dB DEFP NINNN DEFP NINNN Autor
Ref Offset 0.5 dB 10 dB/div Ref 20.50 dBm	-4.17 dBm		Ref Offset 0.5 dB
105 050 950	m my my m	Center Freq 2.411000000 GHz	Image: https://documents.org/abs//documents
195 295 395		Start Freq 2.400500000 GHz	sq         195         Star           295         395         24216000
495		Stop Freq 2.421500000 GHz	N 49.5 Stop Stop 2441500024415000
Start 2.40050 GHz #VBW 100 kHz Sweep (#Swp)	Stop 2.42150 GHz 2.533 ms (1001 pts)	CF Step 2.100000 MHz <u>Auto</u> Man	p Start 2.42150 GHz Stop 2.44150 GHz CO tz #Res BW 100 kHz #VBW 100 kHz Sweep (#Swp) 2.457 ms (100 rbf) 2.2000 more stop and stop
N         1         f         2.402 000 GHz         -6.99 dBm           3         -	E	Freq Offset 0 Hz	I         I         f         2.422 00 GHz         -7.52 dBm           et         3         -7.62 dBm         -7.62 dBm         -7.62 dBm           t         3         -7.62 dBm         -7.62 dBm         -7.
MSG STAT	us		MSG STATUS

## 2442-2461MHz

#### 2462-2480MHz

🚺 Keysight	Spectrur	n Analyzer	r - Swept !	iA									- 2 🐱	🊺 Ke	ysight Spe	ctrum A	Analyzer - Swe	ept SA								
Center	Freq	2.45	50 Ω 1500	00 GH	Hz		SEN	Run	Avg Typ	ALIGN AUTO	12:03:07 P TRA TY	M Sep 14, 2018 CE 1 2 3 4 5 6 PE M WWWW	Frequency	Cen	ter Fr	RF eq	50 Ω 2.47150	0000 G	Hz	SE Trig: Fre	e Run	Avg Typ	ALIGN AUTO	12:04:21 P TRA TY	M Sep 14, 2018 CE 1 2 3 4 5 6 PE M WWWWW	Frequency
10 dB/di	R R	ef Offse ef 20.5	et 0.5 d 50 dB	⊫ B m	Gain:Low	• <u>*</u>	Atten: 30	0 dB		Mkr	ء 2 2.461 -3.	00 GHz 45 dBm	Auto Tune	10 d	B/div	Ref Ref	Offset 0.5	dB 11Bm	Gain:Low	#Atten: 3	10 dB		Mk	r2 2.480 -5.	00 GHz 85 dBm	Auto Tune
10.5 0.500	1 4747	~~~~	, , , ,	M	and the second	man	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	, M. M	mm	mm	m	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Center Freq 2.451500000 GHz	10.5 0.500 -9.50	\$ <sup>1</sup>	w.	m	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	hand	m	maria	m	-	an for	<b>*</b> <sup>2</sup>	Center Freq 2.471500000 GHz
-19.5 -29.5 -39.5			+			+							Start Freq 2.441500000 GHz	-19.5 -29.5 -39.5												Start Freq 2.461500000 GHz
-49.5 -59.5 -69.5			+			+							Stop Freq 2.461500000 GHz	-49.5 -59.5 -69.5												Stop Freq 2.481500000 GHz
Start 2. #Res B	4415 W 10	) GHz ) kHz		×	#VB	3W 10	00 kHz	FUN	Sweep	(#Swp) 2	Stop 2.4 .467 ms	6150 GHz (1001 pts)	CF Step 2.000000 MHz Auto Man	Star #Re	t 2.46 s BW	150 100	GHz kHz	×	#VBV	/ 100 kHz	FUN	Sweep	(#Swp)	Stop 2.4 2.467 ms	8150 GHz (1001 pts)	CF Step 2.000000 MHz Auto Man
1 N 2 N 3 4 5	1			2.442 ( 2.461 (	0 GHz 0 GHz		-2.99 dE -3.45 dE	3m 3m					Freq Offset 0 Hz	1 2 3 4 5	N 1 N 1	1		2.462 (	00 GHz 00 GHz	-3.98 d -5.85 d	Bm Bm					Freq Offset 0 Hz
6 7 8 9 10 11												≣.		6 7 8 9 10 11											<u>.</u>	
MSG										STATU	S	F		KSG						m			STATU	is	•	

## 8. Channel Separation

## 8.1. Test Setup



## 8.2. Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

## 8.3. Test Procedure

The EUT was setup to ANSI C63.4, 2014; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

## 8.4. Uncertainty

± 283Hz



## 8.5. Test Result of Channel Separation

Product	:	VUZE-XR Camera
Test Item	:	Channel Separation
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)

	Eroquonou	Measurement	Limit	Limit of (2/3)*20dB		
Channel No.	(MH <sub>2</sub> )	Level	$(l_{2}\mathbf{U}_{2})$	Dondwidth (1247)	Result	
	(MITZ)	(kHz)	(KHZ)	Bandwidtii (KHZ)		
00	2402	1000	>25 kHz	628.0	Pass	
39	2441	1000	>25 kHz	626.0	Pass	
78	2480	1000	>25 kHz	622.0	Pass	

NOTE: The 20dB Bandwidth is refer to section 10.

🊺 Ke	eysigh	t Spect	rum A	Analyzer - Swe	pt SA								
Cer	nter	Fre	RF eq 2	50 Ω 2.40200	AC 0000 GH	z	SEI	NSE:INT	Avg Typ	ALIGN AUTO e: Log-Pwr	09:47:07 A	M Sep 14, 2018	Frequency
10 d	B/di	v	Ref Ref	Offset 0.5	i dB JBm	lO: Wide ⊆ jain:Low	#Atten: 3	0 dB		Mkr	2 2.403 3.	00 GHz	Auto Tune
Log 10.6 0.500								1	2				Center Freq 2.402000000 GHz
-19.5 -29.5 -39.5	; ; ;												Start Freq 2.397000000 GHz
-49.5 -59.5 -69.5	; ;	erende A		يوم، مواجع المراجع الم المراجع المراجع	evertersonal halfs-table	Aller and a second				- monoral and		af the ofference of the second	<b>Stop Freq</b> 2.407000000 GHz
Cer #Re	nter es B MOD	2.40 W 1	020 00	00 GHz kHz	X	#VBV	V 100 kHz Y	FUI	#	Sweep 5	Span 1 000.0 ms (	0.00 MHz 1001 pts) DN VALUE	CF Step 1.000000 MHz <u>Auto</u> Man
1 3 4 5 6 7 8 9	N	1	f		2.402 00 2.403 00	) GHz ) GHz	0.37 dl 3.19 dl	Bm Bm Internet internet intern				E	Freq Offset 0 Hz
11							Ш			GTATU		•	

## Channel 00 (2402MHz)

🎉 Keysight Sp	oectrum Analyzer - Sv	vept SA						
KN RL Center F	RF 50 S	2 AC 00000 GHz	SENSE:INT	Avg Type	align auto : Log-Pwr	09:59:19 AM	E 1 2 3 4 5 6	Frequency
10 dB/div	Ref Offset 0 Ref 20.50	PNO: Wide IFGain:Low .5 dB dBm	#Atten: 30 dB		Mkr	2 2.442 3.8	00 GHz 30 dBm	Auto Tune
10.5 0.500 -9.50				2				<b>Center Freq</b> 2.441000000 GHz
-19.5 -29.5 -39.5					L.	1		Start Freq 2.436000000 GHz
-49.5 -59.5 -69.5	hallfellawatuvli					HANNING AND	illinit	<b>Stop Freq</b> 2.446000000 GHz
Center 2 #Res BW	.441000 GHz / 100 kHz	* #V	BW 100 kHz	#\$	Sweep 5	Span 1 00.0 ms ('	0.00 MHz 1001 pts)	<b>CF Step</b> 1.000000 MHz <u>Auto</u> Man
1 N 2 N 3 4 5 6		2.441 00 GHz 2.442 00 GHz	3.70 dBm 3.80 dBm				E	Freq Offset 0 Hz
8 9 10 11 <			m		STATUS	3	•	

#### Channel 39 (2441MHz)

## Channel 78 (2480MHz)





Product	:	VUZE-XR Camera
Test Item	:	Channel Separation
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK)

	Encouchast	Measurement	Limit	Limit of (2/3)*20dB	
Channel No.	(MHz)	Level	(1.11.7)	Dondwidth (111-)	Result
	(IVITIZ)	(kHz)	(KHZ)	Bandwidth (KHZ)	
00	2402	1000	>25 kHz	864.0	Pass
39	2441	1000	>25 kHz	850.0	Pass
78	2480	1000	>25 kHz	838.0	Pass

NOTE: The 20dB Bandwidth is refer to section 10.

🊺 Ke	ysight	Spect	rum A	Analyzer - Swe	ept SA									
Cen	L Iter	Fre	RF eq 2	50 Ω 2.40200	AC	łz		ENSE:INT	Av	g Type	ALIGN AUTO : Log-Pwr	11:33:37 A	MSep 14, 2018 E 1 2 3 4 5 6	Frequency
10 d	Bidiy	,	Ref	Offset 0.5	PI IF0 dB <b>IB</b> m	NO: Wide Gain:Low	Trig: Fr #Atten:	ee Run 30 dB			Mkr	2 2.403 -3.	00 GHz	Auto Tune
10.5 10.5 0.500 -9.50				20.00 0				1	2					Center Freq 2.402000000 GHz
-19.5 -29.5 -39.5										Ţ				Start Freq 2.397000000 GHz
-49.5 -59.5 -69.5	and a	~~~~	~~~		anestanestanestanestanestanestanestanest						hum	nkontre-stants	inarrow of the standing of	<b>Stop Freq</b> 2.407000000 GHz
Cen #Re	ter : s B\ MODE	2.40 N 1	020 00	00 GHz kHz	×	#VE	3W 100 kH	z	FUNCTION	#:	Sweep 5	Span 1 00.0 ms (	0.00 MHz 1001 pts)	CF Step 1.000000 MHz Auto Man
1 2 3 4 5 6 7 8 9 10 11 11	N	1	f		2.402 0 2.403 0	0 GHz 0 GHz	-2.83 -3.31	dBm dBm						Freq Offset 0 Hz
MSG											STATUS			

## Channel 00 (2402MHz)

🎉 Keysight Sp	ectrum Analyz	er - Swept SA								
Center F	<sup>RF</sup> req 2.44	50 Ω AC	GHz	SENSI	E:INT /	vg Type	ALIGN AUTO	11:46:31 A TRAC	M Sep 14, 2018	Frequency
	Ref Offs	et 0.5 dB	PNO: Wide O IFGain:Low	#Atten: 30 o	dB		Mkr	2 2.442		Auto Tune
10 dB/div 10.5	Ref 20	.50 dBm			1 2	~~~		-3.1		Center Freq 2.441000000 GHz
-9.50 -19.5 -29.5 -39.5										Start Freq 2.436000000 GHz
-49.5 -59.5 <mark></mark>	19	unipernant all and a second second	nun				w have	filesof all and a second	martighthuman	<b>Stop Freq</b> 2.446000000 GHz
Center 2. #Res BW	441000 ( 100 kHz	GHz	#VB	W 100 kHz	SUNCTION	#	Sweep 5	Span 1 00.0 ms (	0.00 MHz 1001 pts)	<b>CF Step</b> 1.000000 MHz <u>Auto</u> Man
1 N 2 N 3 4 5 6		2.44 2.44	1 00 GHz 2 00 GHz	-3.00 dBr -3.05 dBr	n n			FUNCTION		Freq Offset 0 Hz
7 8 9 10 11 <				III						
MSG							STATUS			

#### Channel 39 (2441MHz)

## Channel 78 (2480MHz)



## 9. Dwell Time

## 9.1. Test Setup



#### **9.2.** Limit

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

## **9.3.** Test Procedure

The EUT was setup to ANSI C63.4, 2014; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

## 9.4. Uncertainty

 $\pm$  25msec



## 9.5. Test Result of Dwell Time

Product	:	VUZE-XR Camera
Test Item	:	Dwell Time
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK) (Channel 00,39,78 –DH5)

Frequency (MHz)	Time slot length (ms)	Hopping of Number	Sweep time (ms)	Duty cycle	Dwell Time (Sec)	Limit (Sec)	Result
2402	2.887	13	50	0.75	0.301	0.4	Pass
2441	2.887	13	50	0.75	0.301	0.4	Pass
2480	2.887	13	50	0.75	0.301	0.4	Pass

Duty cycle = ((Time slot length(ms)\*Hopping of Number) / Sweep time (ms)

Dwell time = (Duty cycle /79) \* (79\*0.4)

Dwell time in AFH mode / 20 channels with hopping rate 800 hops /sec.

#### CH 00 Time Interval between hops

CH 00 Transmission Time

🊺 Keys	iight Sp	pectrun	n Analy	yzer - Sv	vept SA																				🐹 K	leysigl	iht Spec	trum A	Analy	yzer - Swe	ept SA																2
Cent	er F	req	∛ 2.4	50 S	2 AC	)0 G	Hz				SEI	VSE:IN	(T]		Avg Ty	AL ype: I	IGN A	uto Pwr	09:5	1:26 A TRAC	M Sep	14,201 2345	18	Frequency	Cei	RL nte	er Fre	RF eq 2	2.4	50 Ω 0200	AC	0 GH	lz			SENSE	:INT	Av	у Тур	ALIGN e: Log	AUTO Pwr	09	51:40 AM	4 Sep 14, 2 E 1 2 3 4	5 6	Frequenc	сy
				Fact 0	6 40	1	PNO: F Gain:	ast Low	<b>P</b>	Atte	: vide en: 30	odB								D	ET P I	NNN		Auto Tune	┝			D-4				P	NO: Fas Gain:Lo	at 🗣 w	Atten	: 30 di	В					Mk	r3 6.	633 n	ns.	Auto	Tune
10 dB Log	/div	R	ef 20	0.50	dBm		_					_		_					_		_				10 c	dB/d	div	Ref	f 2	0.50 c	Bm												3.6	63 dB	m		_
10.5									_					_		_								Center Freq 2.402000000 GHz	10. 0.50	5 0						Ŷ	<u>,</u> 1	Ŷ		+		_	<b>♦</b> <sup>3</sup>		F					Center 2.40200000	r <b>Freq</b> 0 GHz
0.500 -9.50 -																								Start Freq 2.402000000 GHz	-9.5 -19.5 -29.1	0 6 6																		TRIC		Start 2.40200000	t Freq 0 GHz
-19.5 -29.5																								Stop Freq 2.402000000 GHz	-49.1 -59.1 -69.1	6 6 6						-	<b>B</b> oyer (	M					4	pont						Stop 2.40200000	Freq 0 GHz
-39.5														ł								TRG _\	vi.	CF Step 1.000000 MHz Auto Man	Cei Re:	nter s B	r 2.4 W 1.	020 0 M	000 Hz	000 G	Hz		#\	/BW	1.0 M	Hz	FUI	NCTION	FU	Swe	ep 1	10.00	S ms (	pan 0   1001 p	Hz ts)	CF 1.00000 Auto	Step 0 MHz Man
-49.5 -		٣		Ŷ	1,1	,	-	ţ.	-	hŧ		<b>4</b> '		h	h		M		Ψį	Ņ		hi		Freq Offset 0 Hz	1 2 3 4 5	N N N	1	t t				2.8 3.7 6.6	187 ms 146 ms 133 ms		3.58 3.60 3.63	dBm dBm dBm	1									Freq C	Offset 0 Hz
-69.5									-					+		+									6 7 8 9														+								
Cent Res I	er 2. SW	.402 1.0 N	000 VHz	000	GHz			#VE	sw ·	1.0 1	ИНz					S	wee	р 5	0.00	s ms (	Spar (100	n 0 H 1 pt	lz s)		10 11 1		+								ш									,	•		
MSG	STATUS												MSG																STATU	IS																	

#### CH39 Time Interval between hops

#### CH 39Transmission Time

Keysight Spe	ectrum Analyzer - Swept S	A									Ke Ke	eysight Spectru	m Analy	yzer - Swept SA								
Center Fr	RF 50 Ω A req 2.4410000	c   100 GHz		SE	NSE:INT	Avg Typ	ALIGN AUTO e: Log-Pwr	10:01:55 / TRA	AM Sep 14, 2018	Frequency	Cer	nter Fred	RF <b>2.4</b>	50 Ω AC 41000000	GHz	SENSE:	Avg	ALI Type: L	GN AUTO Og-Pwr	10:02:10 AM S	ep 14, 2018 1 2 3 4 5 6	Frequency
		PNO: I IFGain	Fast 🖵 :Low	Atten: 3	eo 0 dB			6	DET P NNNN	Auto Tune					PNO: Fast C IFGain:Low	Atten: 30 dB				Mkr3 6 6	33 me	Auto Tune
10 dB/div	Ref Offset 0.5 dE Ref 20.50 dB	n									10 d	B/div R	tef Off tef 2	fset 0.5 dB 0.50 dBm						4.03	dBm	
209										Center Freq	10.6	5			01 0	2		¢ <sup>3</sup> —				Center Freq
10.6					-				-	2.441000000 GHz	0.500 -9.50											2.441000000 GHz
0.500										Start Freq	-19.5	5										Start Freq
-9.50										2.441000000 GHz	-29.5		-						_		TRIG LYL	2.441000000 GHz
-19.5										Stop Freq	-49.5	5			landikinakia			үерийн	w9			Stop Freq
-29.5				_					TRIG	2.441000000 GHz	-69.5	; 			_							2.441000000 GHz
-39.5										CF Step	Cer	nter 2.441	1000 MH7	000 GHz	#VB			S14	/een 1	Spa 0.00 ms (10	an 0 Hz	CF Step
-49.5 M										Auto Man	MR	MODE TRC S	SCL	×	#VD	Y	FUNCTION	FUNCT	ION WIDTH	FUNCTION	WALUE _	Auto Man
		ľ	-11	*	- WF	r r		1	10 VI	Freq Offset	1 2 3	N 1 N 1	t t		2.887 ms 3.746 ms 6.633 ms	3.96 dBm 3.98 dBm 4.03 dBm					-	Freq Offset
-59.5										0 Hz	4		-									0 Hz
-69.5											7		+		_						=	
Center 2.4	441000000 GHz	:				1			Span 0 Hz		9 10 11		+									
Res BW 1.	.0 MHZ		#vBW	1.0 MHz			Sweep 5	0.00 ms	(1001 pts)	2	I ≺ MSG		-			m.			STATUS	5	•	



## CH 78 Time Interval between hops

#### CH 78 Transmission Time

🎫 Keysight Spectrum Analyzer - Swept SA		🗱 Keysight Spectrum Analyzer - Swept SA		2 X
μ         RL         RF         S0 Ω         AC         SENSE:INT         ALIGN AU           Center Freq 2.480000000 GHz         Trip: Video         Avg Type: Log-Pu	r TRACE 1 2 3 4 5 6	μg         RL         RF         50 Ω         AC         SENSE:INT           Center Freq 2.480000000 GHz         Teles Video         Teles Video         Teles Video	ALIGN AUTO 10:13:24 AM Sep 14, 2018 Avg Type: Log-Pwr TRACE 12 3 4 5 6 Type trace 12 3 4 5 6	ncy
PNC: Fast C Trig. Hold IFGainLow Atten: 30 dB	Auto Tune	PNO: Fast Configuration Figuration Atten: 30 dB	Mkr3 6.633 ms	o Tune
	2.48000000 GHz	10 detajav Ref 20.50 dBm	→ <sup>3</sup> Cent 2.480000	er Freq 000 GHz
0.900	2.48000000 GH2	195	Sta	I <b>rt Freq</b> 000 GHz
-195	Stop Freq 2.48000000 GHz	-49.5	5480000 2.480000	<b>p Freq</b> 000 GHz
	CF Step 1.000000 MHz <u>Auto</u> Man	Center 2.480000000 GHz Res BW 1.0 MHz #VBW 1.0 MHz ICOSE MADE HIGH SEAL X SOUTH AND	Span 0 Hz         C           Sweep 10.00 ms (1001 pts)         1.0000           FUNCTION WARDER         Auto	F Step 000 MHz Man
895	Freq Offset	N         L         246 ms         3.26 0 Bm           2         N         1         t         3.46 ms         3.36 dBm           3         N         1         t         6.633 ms         3.36 dBm           4	Free	0ffset 0 Hz
Center 2.480000000 GHz Res BW 1.0 MHz #VBW 1.0 MHz Sweep	Span 0 Hz 50.00 ms (1001 pts)			

Note:

The dwell times of the packet type of DH1, DH3, and DH5 are tested. Only the worst case is shown on the report.



Product	:	VUZE-XR Camera
Test Item	:	Dwell Time
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (Channel 00,39,78 –DH5)

Frequency (MHz)	Time slot length (ms)	Hopping of Number	Sweep time (ms)	Duty cycle	Dwell Time (Sec)	Limit (Sec)	Result
2402	2.888	13	50	0.76	0.302	0.4	Pass
2441	2.888	13	50	0.76	0.302	0.4	Pass
2480	2.888	13	50	0.76	0.302	0.4	Pass

Duty cycle =((Time slot length(ms)\*Hopping of Number) / Sweep time (ms)

Dwell time = (Duty cycle / 79) \* (79\*0.4)

Dwell time in AFH mode / 20 channels with hopping rate 800 hops /sec.

	CH 00	Time	Interval	between	hops
--	-------	------	----------	---------	------

#### CH 00 Transmission Time

Keysight spectrum Analyzer - swept SA			B B Keysight Spectrum Analyzer - Swept SA	
Center Freq 2.402000000 GHz SENSE: INT	ALIGN AUTO 11:40:29 AM Sep 14, 2018 Avg Type: Log-Pwr TRACE 1 2 3 4 5 6 TYPE Water Autom	Frequency	M         RL         RF         50 Ω         AC         SENSE:INT         ALIGN AUTO         11:40:43 AM Sep 14, 2018           Center Freq 2.402000000 GHz         Avg Type: Log-Pwr         Trace[123456         Trace[123456	Frequency
PN0:Fast Hig. Houd IFGain:Low Atten: 30 dB Ref Offset 0.5 dB	DET P NNNN	Auto Tune	e Ref Offset 0.5 dB Mkr3 7.483 ms	Auto Tune
10 dB/div Ref 20.50 dBm		Center Freq 2.402000000 GHz	10 dBidiv Ref 20.50 dBm1.90 dBm 2 g 105 2 g 2050	Center Freq 2.402000000 GHz
0.500		Start Freq 2.402000000 GHz	9-30 9-195 2-225 	<b>Start Freq</b> 2.402000000 GHz
-19.5		Stop Freq 2.402000000 GHz	4055         μημημημή         μημημημή           4055         2         2           4055         -         -	Stop Freq 2.40200000 GHz
		CF Step 1.000000 MHz <u>Auto</u> Man	Center 2.402000000 GHz         Span 0 Hz           z Res BW 1.0 MHz         #VBW 1.0 MHz         Sweep 10.00 ms (1001 pts)           use under the sector of the secto	CF Step 1.000000 MHz Auto Man
-69.5	-y r. m -	Freq Offset 0 Hz	1         N         1         t         3.716 ms         -2.28 dBm           2         N         1         t         4.575 ms         -2.99 dBm           4         N         1         t         7.463 ms         -1.95 dBm           z         4	Freq Offset 0 Hz
4935	Span 0 Hz Sween 50 00 ms (1001 nte)			
MSG	STATUS		MSG STATUS	

### CH39 Time Interval between hops

## CH 39Transmission Time

🊺 Keyi	sight Spect	rum Ana	ilyzer - S	wept SA																	- 2 💌	🊺 Ki	leysight S	pectrum	m Anal	lyzer - Swept	I SA													- 4 🛋
Cent	ter Fre	RF 9q 2.4	50 4410	Ω AC	00 G	Hz			S S	SENSE:1	INT]	A	vg Ty	ALIGN pe: Lo	g-Pwr	11	:48:37 A	AM Sep 1 ACE 1 2	14,2018	6	Frequency	Cer	nter F	Freq	RF 2.4	50 Ω 441000	AC 000 0	GHz		Ξ.	SEN	SEINT	Avg Ty	ALIGN	AUTO J-Pwr	11:48	TRACE	iep 14, 2010	6	Frequency
10 dE	3/div	Ref Of Ref 2	ffset 0 20.50	.5 dB	i	PNU: F FGain:	ast C	• •	tten:	30 dB	1	—		—			D	JET P N	INNN		Auto Tune	10 ¢	dB/div	Re	ef Of	ffset 0.5 d 20.50 dB	B Bm	PNO: I IFGain:	ast L	Ā	tten: 30	dB				Mkr	оет 3 7.4 -1.7	63 ms 8 dBn	s n	Auto Tune
10.5								Ŧ		Ŧ	_	Ŧ	_	Ŧ	_	F	_	F			Center Freq 2.441000000 GHz	Log 10.5 0.500	5					*******	^1		¢2			(	3					Center Freq 2.441000000 GHz
0.500 -9.50					/****	•			- - - - -			-			1			1			<b>Start Freq</b> 2.441000000 GHz	-19.5 -29.6 -39.6	5															TRIO LVI	-	Start Freq 2.441000000 GHz
-19.5							+	╞	#		-	⋕	_	╞	+	#	<u> </u>	⋕			<b>Stop Freq</b> 2.441000000 GHz	-49.5 -59.5 -69.f	5 5 5	W.S.	-					nyuyihi	kýi			+	Maph	w.pt	+			Stop Freq 2.441000000 GHz
-39.5						ľ	╡	+	Ţ	+	F	Ŧ	+	F	ŧ	+	F	Ŧ		Au	CF Step 1.000000 MHz uto Man	Cer Res	nter 2 s BW	2.441 1.0 M	000 MHz	2000 GH	łz ×		#VBV	N 1.0	) MHz	FUNC	TION	Swe	ер 1( тмон	0.00 r	Sp ns (10	an 0 Hz 001 pts	z și A	CF Step 1.000000 MHz Auto Mar
-49.5 e		*	- W-	M		1		-	۳ —	+	#	-		+	-m				ha		Freq Offset 0 Hz	1 2 3 4 5	N N N	1 t 1 t 1 t	t			3.716 r 4.575 r 7.463 r	15 15 15		2.13 dB 2.84 dB -1.78 dB	im Im Im								Freq Offset 0 Hz
-69.5 - Cent	ter 2.44	1000	0000	GHz				+		+		+		1				Spar	n 0 Hz	z		7 8 9 10		+	+				+				=							
Res	BW 1.0	) MH2	z			;	#VB	W 1.0	э мн	lz		_	_	Swe	ep f	50.00	) ms	(100	1 pts)	i)		< []			-						ш				etatue					



#### CH 78 Time Interval between hops

CH	78	78 Time Interval between hops																С	H 7	8 T	rar	ism	issi	on T	ime	)										
🛿 Keysig	iht Spectrun	n Analyz	er - Swe	pt SA																a 💽	🚺 Keys	ight Spe	ectrum A	Analyzer - Swe	ept SA											- 2 -
RL ente	r Freq	⊱ 2.48	50 Ω 3000	AC 0000	0 GH	z			SENS	SE:INT		Avg	AL Type: I	IGN AU	ro wr	11:58:22 / TRA	AM Sep 1	4,2018 3 4 5 6	Frequen	icy	Cent	er Fr	RF req 2	50 Ω 2.48000	AC 0000 G	Hz		5	INSE:INT	Avg T)	ALIGN /	-Pwr	11:58:36 TR	AM Sep 14	4,2018	Frequency
					PI	i0: Fast iain:Low	₽	Atter	n: 30 c	dB							DET P N	NNNP	Auto	Tupe					i If	PNO: Fast Gain:Lov	,₽	Atten: 3	ieo 0 dB					DET P N I	NNNN	Auto Tupe
0 dB/c	Re liv <b>R</b> e	f Offs of 20.	et 0.5 .50 d	dB Bm																	10 dB	/div	Ref Ref	Offset 0.5	dB IBm								Mkr3 1 -2	7.463 2.71 d	ms IBm	
10.5 -									_				-		-				Center 2.48000000	r Freq 00 GHz	10.5 0.500 -		_~	6-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1			_1	\2				3			-	Center Freq 2.48000000 GHz
500	][	~~~~	/ <b>-</b>	7	~~~~	)++	17		, <b>-</b> -	7[	*****		77	••••		1	• /~	/	Start 2.48000000	tFreq 00 GHz	-9.50 -19.5 -29.5										-		-			Start Freq 2.48000000 GHz
19.5	$\parallel$			╢	_			+		+	+	<u> </u>	+		$\left  \right $		$\parallel$		Stop 2.48000000	p Freq 00 GHz	-39.5 -49.5 g	4-1 <b>/</b> 14	44				letter.	triffer			-	waar	hit	-		Stop Freq 2.480000000 GHz
39.5										+		=	₩		Ŧ	-	,	IRIG _VL	CF 1.00000 Auto	F Step D0 MHz Man	Cente Res E	er 2.4 3W 1	4800 .0 M	00000 G Hz	Hz	#\	'BW 1	I.0 MH	2		Swee	ep 10	).00 ms	Span (1001	0 Hz pts)	CF Step 1.000000 MHz Auto Man
19.5 <b>v</b>	4	_	eł –	W		×	Ŵ		-		_ <b>t</b>	J		ł	+	₩		ų.	Freq	Offset 0 Hz	1 2 3 4	N 1 N 1 N 1	t t t		× 3. 4. 7.	716 ms 575 ms 463 ms		-2.99 ( -3.70 ( -2.71 (	IBm IBm IBm	NCTION	PREMOR	MDTH	FUNC	nonvalu		Freq Offset 0 Hz
i9.5 —									-				-		-						6 7 8 9										_					
ente	r 2.480	0000	00 G	Hz													Span	0 Hz			11											-				
les B	W 1.0 N	ЛНz				#V	BW	1.0 M	IHz				S	weep	50.	.00 ms	(1001	1 pts)			•														•	
sg														ST	ATUS						MSG											STATUS				

Note:

The dwell times of the packet type of DH1, DH3, and DH5 are tested. Only the worst case is shown on the report.



## 10. Occupied Bandwidth

## 10.1. Test Setup



#### 10.2. Limits

N/A

## **10.3.** Test Procedure

The EUT was setup to ANSI C63.4, 2014; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

## 10.4. Uncertainty

 $\pm$  283Hz



## 10.5. Test Result of Occupied Bandwidth

Product	:	VUZE-XR Camera
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	954		NA
39	2441	975		NA
78	2480	975		NA

🎉 Keysight Sp	pectrum /	Analyzer - Swej	pt SA								
Center F	req 2	50 Ω 2.40200	AC   0000 GH	łz	SE	NSE:INT	Avg Ty	ALIGN AUTO	09:52:57 A	M Sep 14, 2018 CE 1 2 3 4 5 6	Frequency
10 dB(div	Ref	Offset 0.5	PI IFI dB Bm	NO:Wide G Gain:Low	⊖ Trig: Fre #Atten: 3	e Run 0 dB		Mkr2	2.401 5 -17.	26 GHz	Auto Tune
Log				•2	~~~~		<u>^3</u>				Center Freq 2.402000000 GHz
-19.5 -29.5 -39.5									~_	-17.40 dBm	<b>Start Freq</b> 2.400500000 GHz
-49.5	,	<u></u>								- Am Ar han	<b>Stop Freq</b> 2.403500000 GHz
Center 2. #Res BW	.4020 / 30 k	00 GHz Hz	X	#VB\	V 100 kHz	FUN	Sweep	(#Swp) 3	Span 3 .200 ms (	8.000 MHz (1001 pts)	CF Step 300.000 kHz <u>Auto</u> Man
1 N 2 N 3 N 4 5	1 f 1 f 1 f		2.402 14 2.401 52 2.402 48	7 GHz 6 GHz 0 GHz	2.60 d -17.46 dl -17.44 dl	Bm 3m 3m				=	Freq Offset
7 8 9 10 11											
<ul> <li>✓</li> <li>MSG</li> </ul>	·				m		· ·	STATUS	\$		

#### **Figure Channel 00:**

🎉 Keysight Sp	ectrum Analyzer - Sw	ept SA								
Center F	RF 50 Ω req 2.44100	AC 00000 GHz		SEN	Bun	Avg Type	ALIGN AUTO e: Log-Pwr	10:03:28 AI TRAC	M Sep 14, 2018 E 1 2 3 4 5 6 E M WWWW	Frequency
10 dB/div	Ref Offset 0.5	PNO: IFGair 5 dB dBm	Wide 😱 n:Low	#Atten: 30	) dB		Mkr2	2.440 5 -17.	29 GHz 14 dBm	Auto Tune
10.5 0.500			•2	~~~~		3				Center Freq 2.441000000 GHz
-19.5 -29.5 -39.5			<b>J</b> ~~					m	-17.03 dBm	<b>Start Freq</b> 2.439500000 GHz
-49.5										<b>Stop Freq</b> 2.442500000 GHz
Center 2. #Res BW	441000 GHz 30 kHz	×	#VBW	100 kHz	EUNC	Sweep (	(#Swp) 3	Span 3 3.200 ms (	.000 MHz 1001 pts)	CF Step 300.000 kHz <u>Auto</u> Man
1 N 2 N 3 N 4 5 6		2.441 153 G 2.440 529 G 2.441 504 G	iHz iHz iHz	2.97 dE -17.14 dE -17.23 dE	3m 3m 3m 3m					Freq Offset 0 Hz
7 8 9 10 11 <										
MSG							STATU	S		

#### Figure Channel 39:

#### **Figure Channel 78:**





Product	:	VUZE-XR Camera
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2402MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	1320		NA
39	2441	1320		NA
78	2480	1329		NA

## Figure Channel 00:

🊺 Ke	ysight S	pectrur	m Ana	lyzer - Swe	ept SA								
Cen	L Iter F	Frec	RF <b>2.</b>	50 Ω <b>40200</b>	AC 0000 G	Hz	SE Tria: Era	INSE:INT	Avg Ty	ALIGN AUTO	11:42:00 A TRAC	M Sep 14, 2018 CE 1 2 3 4 5 6	Frequency
			ef O	ffset 0.5	5 dB	'NO: Wide ⊂ FGain:Low	#Atten: 3	30 dB		Mkr2	2.401 3	31 GHz	Auto Tune
10 d	B/div	R	ef 2	20.50 c	JBm						-24.	26 dBm	
10.5 0.500 -9.50													Center Freq 2.402000000 GHz
-19.5			$\vdash$		<b></b>	2			mm	<u>3</u>		-24.08 dBm	Start Freq
-29.5 -39.5						<u> </u>	<u> </u>						2.400500000 GHz
-49.5	v		┝	<u>~</u> ~~~		+	+		+	- lm	$\sim$	Transon and	Stop Freg
-59.5 -69.5			t										2.403500000 GHz
Cen #Re	Iter 2 s BM	2.402 V 30	2000 kH	) GHz z		#VB	W 100 kHz	 z	Sweep	) (#Swp) 3	Span 3 .200 ms (	.000 MHz (1001 pts)	CF Step 300.000 kHz Auto Man
MKR	MODE	TRC S	CL		X		Y	FUN	ICTION F	UNCTION WIDTH	FUNCTI	ON VALUE	Auto
1 2 3 4 5	N N N		f f		2.402 14 2.401 33 2.402 6	47 GHZ 31 GHZ 51 GHZ	-4.08 d -24.26 d -24.39 d	Bm Bm Bm				=	Freq Offset 0 Hz
6 7 8 9			+										
11		_	+										
MSG										STATUS	3		<u></u>



🊺 Keysi	ght Spectr	um Analy	zer - Swep	ot SA								
Cente	er Fre	<sup>RF</sup> q 2.4	50 Ω 4100	AC	lz	SEI		Avg Typ	e: Log-Pwr	11:50:08 A	M Sep 14, 2018 E 1 2 3 4 5 6 E M WWWWW	Frequency
				Pi IF(	Gain:Low	#Atten: 3	0 dB		Milero	DI		Auto Tune
10 dB/	div	Ref Off Ref 20	set 0.5 ) <b>.50 d</b>	dB Bm					WIKF2	2.440 3 -23.	99 dBm	
Log 10.5 -		_										Center Freq
0.500 —		-					$-\gamma^1$					2.441000000 GHz
-9.50				<b>∂</b> 2	~~~	- Cont	- ha	and my	3		22.00 dBm	
-29.5		-		-					Ř.		-23.69 dbm	Start Freq 2.439500000 GHz
-39.5 —		~ ^	~						- hon			
-49.5 <del>~</del> -59.5 -										1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		Stop Freq
-69.5 —		_										2.442500000 GHz
Cente	er 2.44	1000	GHz					•		Span 3	.000 MHz	CF Step
#Res	DELITRO	o KHZ SCL		X	#VBV	V 100 KHZ	FUN	Sweep	(#SWP) 3 Nenonworth	.200 ms (		<u>Auto</u> Man
1 N 2 N	N 1 N 1	f f		2.441 15 2.440 33	0 GHz 7 GHz	- <u>3.89 di</u> -23.99 di	3m 3m					Ener offer st
3 N 4	N 1	f		2.441 65	7 GHz	-24.26 dE	3m					Preq Offset 0 Hz
6 7											=	
8												
10 11												
MSG STATUS												

#### Figure Channel 39:

#### Figure Channel 78:





## 11. EMI Reduction Method During Compliance Testing

No modification was made during testing.



Attachment 1: EUT Test Photographs



Attachment 2: EUT Detailed Photographs